

2354/100M483-US1

5

## KIT FOR ASSEMBLY OF A PALLET

### CROSS-REFERENCE TO RELATED APPLICATION

10 This application claims the benefit of U.S. patent application serial No. 60/449,382, filed February 24, 2003, which is hereby incorporated by reference in its entirety.

### TECHNICAL FIELD

15 The present invention relates generally to pallet members, and more particularly to a pallet member that is constructed of individual interlocking members that can be easily stored.

### BACKGROUND

20 There are a number of different pallet constructions that are commercially available for purchase. A pallet is basically designed as a load support member that is constructed to make it easier for transporting and/or storing bulk matter that is placed on a load bearing surface thereof. For example, industrial type pallets have features

formed therein that permit a fork lift truck to carry a pallet that may contain a number of boxes or other types of containers (e.g., sacks) that are arranged in a predetermined pattern on the load bearing surface.

Pallets are often made of wood. The weight and bulk of wooden pallets results in high costs for transporting, storing and disposal of the pallets. Another problem is handling and storing pallets after use. Often they must be transported for reuse or refurbishment, further adding to their cost. Often, they are destroyed after use, further adding to already overloaded landfill facilities.

It is also known to construct a pallet of corrugated paperboard. Although use of corrugated paperboard is advantageous with respect to weight, bulk and recycling issues, new complications are introduced. The added complexity of corrugated pallets required to provide adequate stiffness and load support strength complicates use with lift apparatus such as fork lift trucks. Also, a large number of different pieces are often required to assemble the pallets, especially if used with different sized containers. Large numbers of parts adds to the cost of inventory and assembly costs of the pallets.

In addition to industrial type pallets, pallets can be designed for applicability more in a residence or small office. More specifically, many people store items in boxes that are placed in a cellar or garage. While, the consumer can simply box such items and place them on the ground surface, this may lead to damage or destruction of the boxes themselves since paperboard boxes attract moisture and as the reader will appreciate, basement floors and garage floors tend to be damp. In addition, in areas that are prone to flooding and/or rodent infestation, it is advantageous

to elevate the boxes off of the ground surface. By placing the boxes or containers on the pallet, the items are elevated from the ground surface.

It is therefore desirable to provide a pallet that its formed of smaller individual parts that can easily be interlocked to form the pallet and disassembled for storage thereof.

## SUMMARY

The present invention pertains to a pallet that its formed of smaller individual parts (pallet support members) that can easily be interlocked to form the pallet and disassembled for storage thereof.

According to one embodiment, a pallet kit formed of a number of individual support members that are engageable with one another to form a support pallet is provided. The kit includes a plurality of individual pallet support members that are arranged in an interlocking manner to form the support pallet, wherein each pallet support member has one or more interlocking features that permit each pallet support member to mate with one or more other pallet support member in an interlocking manner. The pallet support members are mated together by orientating the pallet support members in a grid-like pattern with the features aligned and then two pallet support members are interlocked with respect to one another by inserting one pallet support member into features of another pallet support member such that the two pallet support members are effectively interlocked with respect to one another.

In one embodiment, a pallet kit formed of a number of individual support members that are engageable with one another to form a support pallet is provided.

The kit includes one or more flexible pallet support members that are each extendable between a closed position and an open position, with each pallet support member being an elongated structure. The support member is formed of a series of support base units that are connected to one another by a flexible support hinge that permits easy bending between the support base units so that one unit can be placed in one orientation compared to another base unit.

In another embodiment, a pallet kit formed of a number of individual support members that are engageable with one another to form a support pallet is provided. The kit includes a plurality of individual pallet support members that are arranged in an interlocking manner to form the support pallet, wherein each pallet support member has one or more interlocking notches that permit each pallet support member to mate with one or more other pallet support members. Each notch is defined by a pair of vertical walls and a horizontal wall extending therebetween. The pallet support members are mated together by aligning the interlocking notches and then two pallet support members are interlocked with respect to one another by inserting one pallet support member into notches of another pallet support member such that the pallet support members are effectively interlocked with respect to one another. Each vertical wall is formed of first and second beveled surfaces that converge to a point that is spaced apart from the point defined by the beveled surfaces of the opposing vertical wall to permit the pallet support members to be angled with respect to one another at 90 degrees or at an angle other than 90 degrees.

Further aspects and features of the exemplary apparatus disclosed herein can be appreciated from the appended Figures and accompanying written description.

## BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more fully understood by reference to the following drawings which are for illustrative purposes only:

5                    Fig. 1 is a top and side perspective view of a pallet in accordance with a first exemplary embodiment in an assembled condition;

                    Fig. 2 is a side elevation view of an individual pallet member of Fig. 1;

                    Fig. 3 is an enlarged perspective view of a corner of the pallet of Fig. 1 illustrating the interlocking of two pallet members;

10                   Fig. 4 is a perspective view of the pallet of Fig. 1 in its assembled condition and in use supporting a number of members;

                    Fig. 5 is a perspective view of the individual pallet members arranged in a retail package;

15                   Fig. 6 is a top and side perspective view of a pallet according to another embodiment;

                    Fig. 7 is a perspective view of a flexible pallet member for constructing a pallet according to another embodiment and shown in an elongated position;

                    Fig. 8 is a top plan view of the flexible pallet member of Fig. 7 in a closed position;

20                   Fig. 9 is an enlarged view of the flexible pallet member in a closed position showing a hinge element thereof;

                    Fig. 10 is a perspective view of the pallet member of Fig. 7 in an open position;

Fig. 11 is a perspective view of the pallet of Fig. 7 in the closed position;

Fig. 12 is a top plan view of a pallet according to another embodiment and in a first orientation;

Fig. 13 is a top plan view of the pallet of Fig. 12 in a second orientation;

Fig. 14 is an exploded perspective view of two pallet members that are used in the pallet of Fig. 12;

Fig. 15 is a perspective view of the individual pallet members in a stored position;

Figs. 16a and 16b are top plan views of a pallet similar to that of Fig. 12;

Figs 17-19 are perspective views of individual pallet members according to various alternative embodiments;

Fig. 20 is a perspective view of an individual pallet member according to another embodiment;

Fig. 21 is a partial perspective view of two corners of two pallets constructed of the members of Fig. 20 being adapted for connection by a connector that is illustrated in an exploded manner;

Figs. 22a-h are perspective views of individual pallet members according to different embodiments;

Fig. 23 is a perspective view of a border locking member for positioning about an assembled pallet; and

Fig. 24 shows the border locking member of Fig. 23 partially mated with an assembled pallet.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to Figs. 1-6, a pallet 10 according to one exemplary embodiment is illustrated. The pallet 10 has a support body 12 that includes an upper support surface 14 which acts as a load support surface and an opposing lower surface 16. In accordance with this embodiment, the pallet 10 is formed of a number of smaller, individual pallet support members 20 that are arranged in an interlocking manner to form the pallet 10. More specifically, each pallet support member 20 has one or more interlocking features that permit each pallet support member 20 to mate with one or more other pallet support member 20 in an interlocking manner. For example, each pallet support member 20 has one or more and preferably a plurality of notches 30 (e.g., a rectangular or square shaped notch). The notches 30 are placed at predetermined locations along the length of the pallet support member 20. In Fig. 1, each pallet support member 20 has three notches 30 formed therein. Each notch 30 is defined by two opposing vertical walls 32 and a horizontal wall 34 that extends therebetween.

The pallet support members 20 are mated together by orientating the pallet support members 20 in a grid like pattern with the notches 30 aligned and then two pallet support members 20 are interlocked with respect to one another by inserting one pallet support member 20 into another pallet support member 20 such that the two horizontal walls 34 seat against one another. In this position, the two pallet support members 20 are effectively interlocked with respect to one another. The pallet 10 itself is constructed by interlocking the various pallet support members 20 in the aforementioned manner. This size of the pallet 10 is variable as shown in the figures. It

```
{W:\02354\100m483us\l00133650.DOC 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 }
```



support members 110 can be arranged in spaced relation to form the pallet 100 and because the support members 110 are readily adjustable, the precise pattern of the pallet 100 and the support surface defined thereby is easily reconfigurable. In one embodiment, the base units 112 are formed as extruded urethane members and the hinge 114 is a hot pressed flat spot in the extruded urethane foam.

Figs. 12-16 illustrate yet another embodiment of the present invention in which a pallet 200 is illustrated. In this embodiment, the pallet 200 is formed of a plurality of support members 210. Each of the support members 210 is in the form of an elongated support beam that includes interlocking features formed therein that permit each pallet support member 210 to mate with one or more other pallet support member 210 in an interlocking manner. For example, each pallet support member 210 has one or more and preferably a plurality of notches 220. The notches 220 are placed at predetermined locations along the length of the pallet support member 210. In Fig. 14, each pallet support member 210 has three notches 220 formed therein. Each notch 220 is defined by two opposing vertical walls 222 and a horizontal wall 224 that extends therebetween. Each vertical wall 222 is not a smooth surface but rather is formed of a pair of beveled surfaces 223, 225 that converge to a point 227 that is spaced apart from the point 227 of the opposing vertical wall 222. The distance between one point 227 to the opposing point 227 is about equal to or slightly less than a width of the pallet support member 210. The distance between one beveled surface 223 on one vertical wall 222 and the beveled surface 225 of the other vertical wall 222 is about equal to or slightly less than a width of the pallet support member 210. Similarly, the distance between one beveled surface 225 on one vertical wall 222 and the beveled surface 223

of the other vertical wall 222 is about equal to or slightly less than a width of the pallet support member 210. These dimensions permit one support member 210 to be interlocked with another support member 210 such that the two are not necessarily perpendicular to one another but rather they are angled with respect to one another by mating the two support members 210 such that one support member 210 is disposed between one beveled surface 225 and one beveled surface 223 or between one beveled surface 223 and one beveled surface 225.

The pallet support members 210 are mated together by orientating the pallet support members 210 with the notches 220 aligned and then two pallet support members 210 are interlocked with respect to one another by inserting one pallet support member 210 into another pallet support member 210 such that the two horizontal walls 224 seat against one another and the beveled surfaces 223, 225 engage one another. In this position, the two pallet support members 210 are effectively interlocked with respect to one another. The pallet 200 itself is constructed by interlocking the various pallet support members 210 in the aforementioned manner. This size of the pallet 10 is variable as shown in the figures. It will be appreciated that this type of interlocking pallet 200 can easily and quickly be constructed and then taken apart by disengaging the pallet support members 210 from one another.

Figs. 17-19 illustrate individual pallet support members according to various other embodiments. Fig. 17 shows an individual pallet support member 300 that has a pair of side walls 302 with an inner reinforcing feature 304 which in the present embodiment assumes a wave like pattern. The member 300 includes a notch 306 formed in one face thereof to permit mating with another member 300 to form the

pallet. Fig. 18 illustrates an individual pallet support member 310 where the reinforcing feature 304 is in the form of a series of X-shaped support beams extending between and being integral to the side walls 302. Fig. 19 illustrates another pallet support member 320 that is formed of a pair of side walls 322 that come together and are joined at select locations 324. In other words, each of the side walls 322 has a wave-like pattern that and at points where the side walls 322 converge and contact one another, a strengthened location 324 is formed. Preferably, a predetermined number of notches 326 are formed at select number of locations 324. Thus, the notches 326 should be formed at the locations 324 as opposed to where the side walls 322 are apart from one another. Each of the pallet support members of Figs. 17-19 can be manufactured using an injection molding process or any other type of conventional manufacturing process.

Fig. 20 illustrates an individual pallet support member 330 according to another embodiment and is in the form of a corrugated plastic member. The member 330 is an elongated beam-like structure that has a plurality of notches 332 formed along one edge thereof that runs the length of the member 330 (e.g., an upper or lower edge of the member 330). In addition, one or more ends 334 of the member 330 include a notch 332 for facilitating mating between one pallet and another pallet. As shown in Fig. 21, when one pallet is assembled, each corner of the pallet is defined by distal end sections that protrude beyond an intersection of the two mated members 330. In other words, an end section of each pallet member 330 is free for mating and therefore, the notch 332 formed at the end of the member 330 is free to receive a connector 340 that serves to couple one pallet to another pallet. The connector 340 is in the form of a rectangular or square shaped member that has a pair of notches 342 formed at ends

{W:\02354\100m483us1\00133650.DOC 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 }

5

20

In order to mate the locking member 400 with the pallet 410, a number of slots or slits 423 are formed between the two ends of the member 400. The slits 423 are complementary to the locking tabs 413 formed at the ends 412 such that the locking tabs 413 can be received therethrough so as to couple each side of the pallet 410 to a respective side of the locking member 400 as is shown in Fig. 24. By frictionally fitting the locking tabs 413 into the slits 423, the two facing sides are mated together such that at least one side of the locking member 400 is coupled to the adjacent, parallel side of the pallet 410. The slits 423 are carefully formed at spaced locations that align with the locations of the locking tabs 413 so as to permit reception of the tabs 413 into respective slits 423 as shown in Fig. 24. However, it will be understood that there can be additional unused slits 423 so long as there is a corresponding slit 423 for each tab 413. The tabs 413/slits 423 thus serve also to locate the two members with respect to one another. To complete the coupling between the members 400 and the pallet 410, the locking tab 420 mates with the receiving feature 422.

The locking member 400 thus serves to lock the pallet 410 in place to produce a very strong and durable pallet or riser which can easily be assembled and disassembled by the consumer by merely unlocking and decoupling the individual components.

While this invention has been particularly shown and described with references to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the scope of the invention encompassed by the appended claims.